

REMARKS

Reconsideration and allowance of this application are respectfully requested in view of the above amendment and the discussion below.

Applicants invention concerns a hybrid vehicle with an engine and a motor whose purpose is to directly transmit an output from the motor to the drive wheels. When the engine is driving the vehicle, a drive system is changed between forward movement and backward movement by a transmission. However, when the motor is driving the vehicle it is sufficient to change the motor between the forward rotation and the backward rotation by directly driving the wheels.

When the motor replaces the engine so that the driving force is transmitted to the wheel by the transmission it is sufficient to provide one way or one direction for the motor. On the hand, in the instance were the transmission is used at the time of the engine drive, the driving force is not transmitted by the transmission at a time of the motor drive. In such instances it is necessary to reverse rotate the motor and it is further necessary to output a high torque capable of driving the wheel. It is to this structure that the present invention is addressed.

Claims 5, 7, and 9 have been rejected under 35 U.S.C. 103 as unpatentable over Kawakatsu U.S. Patent No. 4,335,429 in view of Tadahiro et al. Japanese Patent No. 8-33246 as indicated at item 8 on page 3 and 4 of the Patent Office Action. Claims 13 and 17 have been rejected over the combination of the above two references and further in view of Fumio Japanese Patent No. 9-274151.

In the "Response To Comments" section at item 7 on pages 5 and 6, the Examiner responds to the comments filed in the Amendment of April 28, 2003 with respect to the reference to Tadahiro et al. by indicating that there is no evidence that Tadahiro et al. operates in a single direction. It is the position of the Examiner that the term in the abstract of Tadahiro et al. concerning "especially a rotor suitable in one direction rotation" does not positively preclude bi-directional operation.

Applicants submit that the motor of Tadahiro et al., although technically able to be reversed rotated, would not be reversed rotated because the torque is reduced by reversing the motor. Therefore the motor is not suitably employed for a general bi-directional motor. Most of the motors use one direction rotation (forward rotation) and the motor of Tadahiro et al. is provided for one rotational direction in view of the description. A hybrid vehicle requires that the backward rotation produces higher torque than the forward rotation and the motor of Tadahiro et al. cannot satisfy the requirement in the hybrid vehicle whereas the present invention achieves this requirement.

Applicants submit that the rejection of claims 5, 7 and 9 is based on a combination of references under 35 U.S.C. 103. The rejection indicates that it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the non-symmetrical configuration of the magnetic insertion opening as taught by Tadahiro et al. to a conventional permanent magnet structure usable in the vehicle of Kawakatsu. Applicants respectfully submit that the teaching of Tadahiro et al. is for "especially a rotor suitable in one direction rotation". In other

words, the Examiner may be correct in the sense that it is theoretically possible that Tadahiro et al. can be reverse rotated. However this is not a teaching that one of ordinary skill in the art would use because, as indicated above, the torque is reduced by reversing the motor and because the hybrid vehicle requires that the backward rotation produce higher torque than the forward rotation.

It is submitted that the teachings available to one of ordinary skill in the art in light of the references is not a teaching of "bi-directional operation" for the rotor of Tadahiro et al.

In summation, the reference to Kawakatsu fails to teach the rotor as including a non-symmetrical configuration and Tadahiro et al., does not provide a "teaching" to provide a system which functions in both directions in order to increase the torque in the reverse direction.

Dependent claims 13 and 17 contain all of the limitations of independent claim 1 and the reference to Fumio adds nothing which meets the limitations of independent claim 5 lacking in the primary reference to Kawakatsu and Tadahiro et al.

Claims 5, 7, 9, 13 and 17 have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite. In response to this rejection Applicants have amended claims 5, 7, 9, 13 and 17 to provide a clear antecedent basis. No new matter is added.

The proposed drawings of April 28, 2003 have been disapproved for the reasons indicated at item 3 on page 2 of the Patent Office Action. In response to these objections, Applicants are resubmitting Figure 1 and new Figure 13 with new

Figure 13 now showing the inclined angle in combination with the arc shape. Furthermore, it is submitted that each of Figures 1 and 13 show the relationship between the width of the hole a and the width of the magnet b as claimed in claim 17.

Therefore in view of the distinguishing features between the claimed invention and the references, Applicants respectfully request that this application containing claims 5, 7, 9, 13 and 17 be allowed and be passed to issue.

If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket #056203.49196DV).

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Respectfully submitted,

  
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Vincent J. Sunderdick  
Registration No. 29,004

CROWELL & MORING, LLP  
P.O. Box 14300  
Washington, DC 20044-4300  
Telephone No.: (202) 624-2500  
Facsimile No.: (202) 628-8844

VJS:adb